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Sequence Listing was accepted with existing errors.
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Reviewer: Durreshwar Anjum
Timestamp: Tue May 15 12:31:12 EDT 2007
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Application No: 10571667   Version No: 1.1

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Finished: 2007-05-15 12:30:58.489
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Total Errors: 0
No. of SeqIDs Defined: 20
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<110> DE VRIES, Erik
 GAFFAR, Fasilla Razzia
 YATSUDA, Ana Patricia
 SCHAAP, Theodorus Cornelis

<120> Piroplasmid vaccine

<130> I-2003.010 US

<140> 10/571,667
<141> 2006-03-14

<150> PCT/EP2004/052169
<151> 2004-09-14

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1   5   10   15

aag cgc atg ctt tgt atg gct ctt gta cca gtt atc tta tcg tca ttt   96
Lys Arg Met Leu Cys Met Ala Leu Val Pro Val Ile Leu Ser Ser Phe
            20   25   30

ttt gcg gaa gat gct tta gct tcc aac tcc acg ctt ttc gct ttc cac   144
Phe Ala Glu Asp Ala Leu Ala Ser Asn Ser Thr Leu Phe Ala Phe His
        35   40   45

aag gaa cca aac aat cgt agg ctt acc aaa agg tct tca aga gga cag   192
Lys Glu Pro Asn Asn Arg Arg Leu Thr Lys Arg Ser Ser Arg Gly Gln
    50   55   60

ttg ctc aac tca agg agg ggt tcg gat gat gcg tcc gaa tct tcc gat   240
Leu Leu Asn Ser Arg Arg Gly Ser Asp Asp Ala Ser Glu Ser Ser Asp
65   70   75   80

aga tac cca ggt agg tcg ggt ggc tct aag aat tcg agc caa tcc ccc   288

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Arg Tyr Pro Gly Arg Ser Gly Gly Ser Lys Asn Ser Ser Gln Ser Pro
            85                  90                  95


tgg atc aag tat atg caa aag ttc gac att ccc cgt aac cac ggc tct    336
Trp Ile Lys Tyr Met Gln Lys Phe Asp Ile Pro Arg Asn His Gly Ser
            100                 105                 110


gga atc tat gtc gat ctt gga gga tat gaa tcc gtt ggt tca aaa agt    384
Gly Ile Tyr Val Asp Leu Gly Gly Tyr Glu Ser Val Gly Ser Lys Ser
            115                 120                 125


tat cgt atg ccc gtt ggt aag tgc cca gta gtc ggt aaa att ata gac    432
Tyr Arg Met Pro Val Gly Lys Cys Pro Val Val Gly Lys Ile Ile Asp
        130                 135                 140


ctt gga aat ggt gcc gac ttc ctc gat ccc att tca tca gac gac cca    480
Leu Gly Asn Gly Ala Asp Phe Leu Asp Pro Ile Ser Ser Asp Asp Pro
145                 150                 155                 160


agt tac cgt ggt ttg gca ttc ccc gag act gct gtg gac tct aat att    528
Ser Tyr Arg Gly Leu Ala Phe Pro Glu Thr Ala Val Asp Ser Asn Ile
                165                 170                 175


ccc aca caa cca aag aca cgt ggt tct tca tca gca tct gcg gcc aaa    576
Pro Thr Gln Pro Lys Thr Arg Gly Ser Ser Ser Ala Ser Ala Ala Lys
            180                 185                 190


tta tct cct gtt tcg gcg aaa gat ctg aga cgt tgg gga tat gaa ggt    624
Leu Ser Pro Val Ser Ala Lys Asp Leu Arg Arg Trp Gly Tyr Glu Gly
            195                 200                 205


aat gat gta gcg aat tgc tca gaa tat gct agt aac ctc att ccc gca    672
Asn Asp Val Ala Asn Cys Ser Glu Tyr Ala Ser Asn Leu Ile Pro Ala
        210                 215                 220


tca gac agg agt acc aaa tat agg tat cct ttt gtt ttt gac agt gat    720
Ser Asp Arg Ser Thr Lys Tyr Arg Tyr Pro Phe Val Phe Asp Ser Asp
225                 230                 235                 240


aac cag atg tgt tac ata ctg tac tct gcc ata caa tac aac caa gga    768
Asn Gln Met Cys Tyr Ile Leu Tyr Ser Ala Ile Gln Tyr Asn Gln Gly
                245                 250                 255


aat agg tat tgt gac aac gat ggt agc tcc gaa gat ggt aca agc tct    816
Asn Arg Tyr Cys Asp Asn Asp Gly Ser Ser Glu Asp Gly Thr Ser Ser
                260                 265                 270


ttg ctt tgc atg aaa cct tac aag agc gct gag gat gca cac tta tac    864
Leu Leu Cys Met Lys Pro Tyr Lys Ser Ala Glu Asp Ala His Leu Tyr
            275                 280                 285


tac ggt tct gcg aaa gtt gac ccc gat tgg gaa gaa aat tgt ccc atg    912
Tyr Gly Ser Ala Lys Val Asp Pro Asp Trp Glu Glu Asn Cys Pro Met
            290                 295                 300


cac ccg gta agg gat gcc att ttt ggt aaa tgg tct ggt ggc tct tgt    960
His Pro Val Arg Asp Ala Ile Phe Gly Lys Trp Ser Gly Gly Ser Cys
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gtt gcc att gct cct gca ttc caa gaa tat gcc aac agc act gaa gac    1008
Val Ala Ile Ala Pro Ala Phe Gln Glu Tyr Ala Asn Ser Thr Glu Asp
            325                 330                 335

tgt gca gcc att tta ttc gat aac tct gca act gac ttg aat atc gaa    1056
Cys Ala Ala Ile Leu Phe Asp Asn Ser Ala Thr Asp Leu Asn Ile Glu
            340                 345                 350

gct gtt aac gaa gat ttt aat gaa ctt aaa gaa ttg acc gat ggg ctt    1104
Ala Val Asn Glu Asp Phe Asn Glu Leu Lys Glu Leu Thr Asp Gly Leu
            355                 360                 365

aaa aga ttg aac atg tcg aag gtt gca aac gct att ttt tct ccc ctc    1152
Lys Arg Leu Asn Met Ser Lys Val Ala Asn Ala Ile Phe Ser Pro Leu
        370                 375                 380

tcc aat gtt gca ggt acc agt cga att tca cgt ggt gtg ggt atg aac    1200
Ser Asn Val Ala Gly Thr Ser Arg Ile Ser Arg Gly Val Gly Met Asn
385                 390                 395                 400

tgg gct aca tac gat aaa gat tct ggt atg tgt gct ctc att aac gaa    1248
Trp Ala Thr Tyr Asp Lys Asp Ser Gly Met Cys Ala Leu Ile Asn Glu
                405                 410                 415

aca cct aac tgc ttg atc ttg aac gcg gga agc att gct ctc acg gct    1296
Thr Pro Asn Cys Leu Ile Leu Asn Ala Gly Ser Ile Ala Leu Thr Ala
            420                 425                 430

ata ggt tca cct ctc gag tat gac gct gtt aac tat cct tgc cac atc    1344
Ile Gly Ser Pro Leu Glu Tyr Asp Ala Val Asn Tyr Pro Cys His Ile
        435                 440                 445

gac acc aat ggt tac gtt gag cca cgt gca aag aat acc aac aaa tac    1392
Asp Thr Asn Gly Tyr Val Glu Pro Arg Ala Lys Asn Thr Asn Lys Tyr
        450                 455                 460

ctt gat gtt cct ttc gag gtc aca act gct ttg agc atg aag aca cta    1440
Leu Asp Val Pro Phe Glu Val Thr Thr Ala Leu Ser Met Lys Thr Leu
465                 470                 475                 480

aaa tgc gat gcc tat gtt cac acc aag tac tct gac agt tgt ggt acc    1488
Lys Cys Asp Ala Tyr Val His Thr Lys Tyr Ser Asp Ser Cys Gly Thr
                485                 490                 495

tat ttc ctt tgc tca gac gtc aaa cct aac tgg ttc att agg ttc tta    1536
Tyr Phe Leu Cys Ser Asp Val Lys Pro Asn Trp Phe Ile Arg Phe Leu
            500                 505                 510

cac atg atc gga ctc tac aac aca aag cgt atc gta ata ttc gtg tgc    1584
His Met Ile Gly Leu Tyr Asn Thr Lys Arg Ile Val Ile Phe Val Cys
            515                 520                 525

tgt acc act acc gcc atc gtt ctc act atc tgg ata tgg aaa cga ttc    1632
Cys Thr Thr Thr Ala Ile Val Leu Thr Ile Trp Ile Trp Lys Arg Phe
        530                 535                 540
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atc aag gct aag aaa gag ccg gcc cct cca agt ttc gac aaa tac cta          1680
Ile Lys Ala Lys Lys Glu Pro Ala Pro Pro Ser Phe Asp Lys Tyr Leu
545                 550                 555                 560


agc aac tat gat tat gat aca acc cta gat gcc gac aac gaa acg gaa          1728
Ser Asn Tyr Asp Tyr Asp Thr Thr Leu Asp Ala Asp Asn Glu Thr Glu
                565                 570                 575


cag cgt ttg gat tcc tct gct tat agc tgg gga gag gct gta caa aga          1776
Gln Arg Leu Asp Ser Ser Ala Tyr Ser Trp Gly Glu Ala Val Gln Arg
            580                 585                 590


cca agt gat gtc acc cct gta aaa ctc tct aaa atc aac taa              1818
Pro Ser Asp Val Thr Pro Val Lys Leu Ser Lys Ile Asn
        595                 600                 605




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Lys Arg Met Leu Cys Met Ala Leu Val Pro Val Ile Leu Ser Ser Phe
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Phe Ala Glu Asp Ala Leu Ala Ser Asn Ser Thr Leu Phe Ala Phe His
        35                  40                  45


Lys Glu Pro Asn Asn Arg Arg Leu Thr Lys Arg Ser Ser Arg Gly Gln
    50                  55                  60


Leu Leu Asn Ser Arg Arg Gly Ser Asp Asp Ala Ser Glu Ser Ser Asp
65                  70                  75                  80


Arg Tyr Pro Gly Arg Ser Gly Gly Ser Lys Asn Ser Ser Gln Ser Pro
                85                  90                  95


Trp Ile Lys Tyr Met Gln Lys Phe Asp Ile Pro Arg Asn His Gly Ser
            100                 105                 110


Gly Ile Tyr Val Asp Leu Gly Gly Tyr Glu Ser Val Gly Ser Lys Ser
        115                 120                 125
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Tyr Arg Met Pro Val Gly Lys Cys Pro Val Val Gly Lys Ile Ile Asp
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Leu Gly Asn Gly Ala Asp Phe Leu Asp Pro Ile Ser Ser Asp Asp Pro
145                 150                 155                 160

Ser Tyr Arg Gly Leu Ala Phe Pro Glu Thr Ala Val Asp Ser Asn Ile
                165                 170                 175

Pro Thr Gln Pro Lys Thr Arg Gly Ser Ser Ser Ala Ser Ala Ala Lys
                180                 185                 190

Leu Ser Pro Val Ser Ala Lys Asp Leu Arg Arg Trp Gly Tyr Glu Gly
        195                 200                 205

Asn Asp Val Ala Asn Cys Ser Glu Tyr Ala Ser Asn Leu Ile Pro Ala
    210                 215                 220

Ser Asp Arg Ser Thr Lys Tyr Arg Tyr Pro Phe Val Phe Asp Ser Asp
225                 230                 235                 240

Asn Gln Met Cys Tyr Ile Leu Tyr Ser Ala Ile Gln Tyr Asn Gln Gly
                245                 250                 255

Asn Arg Tyr Cys Asp Asn Asp Gly Ser Ser Glu Asp Gly Thr Ser Ser
                260                 265                 270

Leu Leu Cys Met Lys Pro Tyr Lys Ser Ala Glu Asp Ala His Leu Tyr
        275                 280                 285

Tyr Gly Ser Ala Lys Val Asp Pro Asp Trp Glu Glu Asn Cys Pro Met
    290                 295                 300

His Pro Val Arg Asp Ala Ile Phe Gly Lys Trp Ser Gly Gly Ser Cys
305                 310                 315                 320

Val Ala Ile Ala Pro Ala Phe Gln Glu Tyr Ala Asn Ser Thr Glu Asp
                325                 330                 335

Cys Ala Ala Ile Leu Phe Asp Asn Ser Ala Thr Asp Leu Asn Ile Glu
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Ala Val Asn Glu Asp Phe Asn Glu Leu Lys Glu Leu Thr Asp Gly Leu
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                355                     360                     365


Lys Arg Leu Asn Met Ser Lys Val Ala Asn Ala Ile Phe Ser Pro Leu
    370                 375                 380


Ser Asn Val Ala Gly Thr Ser Arg Ile Ser Arg Gly Val Gly Met Asn
385                 390                 395                 400


Trp Ala Thr Tyr Asp Lys Asp Ser Gly Met Cys Ala Leu Ile Asn Glu
                405                 410                 415


Thr Pro Asn Cys Leu Ile Leu Asn Ala Gly Ser Ile Ala Leu Thr Ala
                420                 425                 430


Ile Gly Ser Pro Leu Glu Tyr Asp Ala Val Asn Tyr Pro Cys His Ile
            435                 440                 445


Asp Thr Asn Gly Tyr Val Glu Pro Arg Ala Lys Asn Thr Asn Lys Tyr
    450                 455                 460


Leu Asp Val Pro Phe Glu Val Thr Thr Ala Leu Ser Met Lys Thr Leu
465                 470                 475                 480


Lys Cys Asp Ala Tyr Val His Thr Lys Tyr Ser Asp Ser Cys Gly Thr
                485                 490                 495


Tyr Phe Leu Cys Ser Asp Val Lys Pro Asn Trp Phe Ile Arg Phe Leu
            500                 505                 510


His Met Ile Gly Leu Tyr Asn Thr Lys Arg Ile Val Ile Phe Val Cys
        515                 520                 525


Cys Thr Thr Thr Ala Ile Val Leu Thr Ile Trp Ile Trp Lys Arg Phe
    530                 535                 540


Ile Lys Ala Lys Lys Glu Pro Ala Pro Pro Ser Phe Asp Lys Tyr Leu
545                 550                 555                 560


Ser Asn Tyr Asp Tyr Asp Thr Thr Leu Asp Ala Asp Asn Glu Thr Glu
                565                 570                 575


Gln Arg Leu Asp Ser Ser Ala Tyr Ser Trp Gly Glu Ala Val Gln Arg
            580                 585                 590
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Pro Ser Asp Val Thr Pro Val Lys Leu Ser Lys Ile Asn
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cct gtg tta gga agc aac tct gac cct tcg gaa gag tat gat tca ttc   96
Pro Val Leu Gly Ser Asn Ser Asp Pro Ser Glu Glu Tyr Asp Ser Phe
            20   25   30

cag caa aat gtt ttc act cat caa cca acc caa cta cac aaa tct cat   144
Gln Gln Asn Val Phe Thr His Gln Pro Thr Gln Leu His Lys Ser His
        35   40   45

cac tac att aca cac cag aaa aaa acc agc caa cac atc gac gat tta   192
His Tyr Ile Thr His Gln Lys Lys Thr Ser Gln His Ile Asp Asp Leu
    50   55   60

aat ttt tat aat gga aaa ttt aat caa aag agc aga att ggt cca ggg   240
Asn Phe Tyr Asn Gly Lys Phe Asn Gln Lys Ser Arg Ile Gly Pro Gly
65   70   75   80

aag gta gta aat aac agt agg aat ctg gta gaa ggt gaa aca cta tct   288
Lys Val Val Asn Asn Ser Arg Asn Leu Val Glu Gly Glu Thr Leu Ser
                85   90   95

aag gat gac aat aaa aca aaa tct aaa ata aag tca aaa aca gca tca   336
Lys Asp Asp Asn Lys Thr Lys Ser Lys Ile Lys Ser Lys Thr Ala Ser
                100   105   110

att tta cct aga ctt tta aaa tct tta tca ttt tta gct gtt tta ggg   384
Ile Leu Pro Arg Leu Leu Lys Ser Leu Ser Phe Leu Ala Val Leu Gly
        115   120   125

tca att aat tca ttt tca tta gca tta gag gaa cct ttt act caa cac   432
Ser Ile Asn Ser Phe Ser Leu Ala Leu Glu Glu Pro Phe Thr Gln His
    130   135   140

act tct aac cga acg ccc ttt gaa gta tca tta att caa agc aac agc   480
Thr Ser Asn Arg Thr Pro Phe Glu Val Ser Leu Ile Gln Ser Asn Ser
145   150   155   160

agt tta tcg cct att cat aat tct tca act caa aat tca agt cat cac   528
Ser Leu Ser Pro Ile His Asn Ser Ser Thr Gln Asn Ser Ser His His
            165   170   175

aac ggt ttt agt ggt agt acc gtt aat aat acc tca tta ata gag aca   576
Asn Gly Phe Ser Gly Ser Thr Val Asn Asn Thr Ser Leu Ile Glu Thr
            180   185   190

agg aat aac gta tta aac aga aca cta ggt aga ttc gga tca ttt ttg   624
Arg Asn Asn Val Leu Asn Arg Thr Leu Gly Arg Phe Gly Ser Phe Leu
        195   200   205

caa tca gga ttg ata agc agt aga gca gac aaa aag aag cgg tct ggt   672
Gln Ser Gly Leu Ile Ser Ser Arg Ala Asp Lys Lys Lys Arg Ser Gly
    210   215   220

atg aat aga aga ggc cct aag ggg aag aaa ggg aag gga gga gaa gac   720
Met Asn Arg Arg Gly Pro Lys Gly Lys Lys Gly Lys Gly Gly Glu Asp
225   230   235   240

gaa gaa aag agg aac aag tgg acc gat ttc atg gca aag ttt gat atc   768
Glu Glu Lys Arg A